

WHAT IS CLAIMED IS:

- 1 1. An air-permeable composite fabric comprising:
2 a first fabric layer;
3 a second fabric layer; and
4 an intermediate, air-permeable vapor barrier disposed between and bonded to said
5 first fabric layer and said second fabric layer;
6 said intermediate, air-permeable barrier layer being selected from the group
7 consisting of: a foamed adhesive in the form of a discontinuous film, an adhesive in the form
8 of a continuous film mechanically altered by one of crushing and stretching, and a membrane
9 disposed between and adhered to said first fabric layer and said second fabric layer with an
10 adhesive and mechanically altered by stretching,
11 said intermediate, air-permeable vapor barrier layer having a level of air permeability
12 to allow air flow between said first fabric layer and said second fabric layer, and
13 said intermediate, air-permeable vapor barrier layer having a variable level of water
14 vapor diffusion resistance that substantially decreases as air speed of moving air impinging
15 on said composite fabric increases.
- 1 2. The air-permeable composite fabric of claim 1, wherein said adhesive is selected
2 from the group consisting of polyurethane, acrylics, polyamides, polyesters and combinations
3 thereof.
- 1 3. The air-permeable composite fabric of claim 1, wherein at least one of said first
2 fabric layer and said second fabric is rendered hydrophilic.
- 1 4. The air-permeable composite fabric of claim 1, wherein at least one of said first
2 fabric layer and said second fabric layer has a raised surface.
- 1 5. The air-permeable composite fabric of claim 1, wherein said intermediate, air-
2 permeable vapor barrier comprises an adhesive selected from the group consisting of: an
3 adhesive in the form of a mechanically altered continuous film and a foamed adhesive in the
4 form of a discontinuous film.

1 6. The air-permeable composite fabric of claim 5, wherein said vapor barrier is
2 exclusively foamed adhesive in the form of a discontinuous film.

1 7. The air-permeable composite fabric of claim 1, wherein said intermediate, air-
2 permeable vapor barrier comprises the membrane disposed between said first fabric layer and
3 said second fabric layer and adhered thereto with an adhesive and mechanically altered by
4 stretching, said composite fabric having undergone mechanical processing.

1 8. The air-permeable composite fabric of claim 1 or claim 7, wherein said membrane
2 is made from a material selected from the group consisting of polyurethane, polyamide,
3 polytetrafluoroethylene, polyester and combinations thereof.

1 9. The air-permeable composite fabric of claim 7 wherein said mechanical processing
2 comprises controlled stretching.

1 10. The air-permeable composite fabric of claim 1, claim 5 or claim 7, wherein said
2 adhesive is selected from the group consisting of polyurethane, acrylics, polyamides,
3 polyesters and combinations thereof.

1 11. A method of forming an air-permeable composite fabric comprising the steps of:
2 selecting a vapor barrier from the group consisting of a membrane and an adhesive,
3 disposing the vapor barrier between a first fabric layer and a second fabric layer in
4 order to produce the composite fabric, and
5 mechanically processing the composite fabric of such that the intermediate, air-
6 permeable vapor barrier layer has a level of air permeability to allow air flow between the
7 first fabric layer and the second fabric layer and the intermediate, air-permeable vapor barrier
8 layer has a variable level of water vapor diffusion resistance that decreases as air speed
9 impinging on the composite fabric increases.

1 12. The method of claim 11, wherein said vapor barrier is a membrane, and wherein
2 the step of mechanical processing comprises controlled stretching of the composite fabric.

1 13. The method of claim 11, wherein said vapor barrier is an adhesive, and the step of
2 mechanical processing comprises applying pressure to the composite fabric.

1 14. The method of claim 13, comprising passing the composite fabric through a
2 plurality of rollers while applying pressure.

1 15. The method of claim 13, comprising passing the composite fabric through a
2 plurality of heated rollers while applying pressure.

1 16. The method of claim 14 or claim 15, comprising passing the composite fabric
2 through the rollers at variable controlled speeds.

1 17. The method of claim 13, wherein the adhesive is foamed.

1 18. The method of claim 13, comprising disposing the adhesive between the first
2 fabric layer and the second fabric layer by transfer coating using release paper.

1 19. The method of claim 11, comprising disposing the vapor barrier between the first
2 fabric layer and the second fabric layer as a continuous film of adhesive.

1 20. The method of claim 11, comprising disposing the vapor barrier between the first
2 fabric layer and the second fabric layer as a discontinuous film of adhesive.

1 21. The method of claim 11, comprising disposing the vapor barrier between the first
2 fabric layer and the second fabric layer as a film of adhesive using release paper.

- 1 22. The method of claim 11, comprising disposing the vapor barrier between the first
- 2 fabric layer and the second fabric layer by applying the adhesive directly to at least one of the
- 3 first fabric layer and the second fabric layer.